Explanation of the E pain category procedures producing pain and distress and reasons pain relieving agents cannot be used.

A study for developing an adenovirus-vector vaccine for SARS-CoV-2 used 18 hamsters. Some animals were infected with SARS-CoV-2, and then co-housed with vaccinated and unvaccinated animals to study disease transmission and vaccine efficacy. The study examines the effect of the vaccine on both virus replication and immune mediated disease so drugs altering the immune response cannot be provided.

Explanation of the E pain category procedures producing pain and distress and reasons pain relieving agents cannot be used.

There was one Cystic fibrosis transmembrane conductance regulator (CFTR) study. The study used 69 hamsters. All animals were exposed to cigarette smoke, and no theoretical alternatives exist that can replace in vivo modeling of CFTR. Exposure of cigarette smoke is expected to cause some amount of discomfort that is well tolerated. Since, the whole study involves several episodes of smoke exposure and to keep physiologically relevant anesthesia cannot be administered during smoke exposure.

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A study of treatments for halogen exposure used 4 rabbits in pain category E. Animals were exposed to bromine gas as a simulation of human exposures from chemical transport accidents. Symptoms of gas exposure, discomfort and labored breathing similar to COPD patients, were monitored. Initially analgesics could not be used due to potential interference with the test drugs, but after conducting a pilot study, the use of extended release buprenorphine has been added to the project for all animals with gas exposure.

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A study of antibiotic-resistant middle ear infections used 60 chinchillas in pain category E. The animals were infected with bacteria that cause otitis. Animals are provided analgesia for expected symptoms, however it is unlikely analgesic drugs will relieve all pain/discomfort from the middle ear infection. While tissue culture modeling and in vitro biofilm modeling are used to assess biofilm properties and bacteria interactions, in order to assess the roles of variables in persistent infections it is necessary to perform infection studies in vivo.

Explanation of the E pain category procedures producing pain and distress and reasons pain relieving agents cannot be used.

A study of the Cystic fibrosis transmembrane conductance regulator (CFTR) used 63 ferrets. All animals were exposed to cigarette smoke, and no theoretical alternatives exist that can replace in vivo modeling of CFTR. Exposure of cigarette smoke is expected to cause some amount of discomfort that is well tolerated. Since, the whole study involves several episodes of smoke exposure and to keep physiologically relevant anesthesia cannot be administered during smoke exposure.

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A study of Chronic Obstructive Pulmonary Disease (COPD) used 9 ferrets. All animals were exposed to cigarette smoke, and no theoretical alternatives exist that can replace in vivo modeling of COPD. Exposure of cigarette smoke is expected to cause some amount of discomfort that is well tolerated. Animals were then challenged with common bacterial or viral agents found in COPD patients, and treated with a test drug. Since the study involves testing the efficacy of a new broad spectrum anitmicrobial treatment, drugs altering the immune response cannot be administered.

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This Diabetic Retinopathy (DR) pilot study used 11 Tree Shrews in pain category E. Unfortunately, there is no alternative to the use of Tree Shrew in the studies proposed in this pilot study to validate the Tree Shrew as a potential model for DR, which could resemble human pathology closely, but cannot be performed by cell culture. To create the DR, acute hyperglycemia will be induced using streptozotocin causing distress to the animal that cannot be relieved without interfering with the disease study. Insulin will be injected to support animal health and avoid hyperglycemia hyperosmolar coma.

Explanation of the E pain category procedures producing pain and distress and reasons pain relieving agents cannot be used.

A study of high velocity low amplitude spinal manipulation (HVLA-SM) used 9 cats in pain category E. The animals were injected with nerve growth factor (NGF) into the multifudus muscle and then undergo a nonsurvival electrophysiology recording under anesthesia several days later. Creation of a localized area of trunk hypersensitivity is a key component to this study as it mimics the primary clinical reason individuals seek spinal manipulation and the purpose of this project is to determine muscle spindle response changes to spinal manipulation following trunk chemosensitization via NGF injection. Pilot studies in rats showed any discomfort is localized primarily to the site of injection. Since video recording of facial expression will be conducted in order to establish a feline grimace scoring behavioral assay, analgesics cannot be used.